CLAIMS

1. A manufacturing method of a fuel cell, which comprises a hydrogen-permeable metal layer of a hydrogen-permeable metal and an electrolyte layer that is located on the hydrogen-permeable metal layer and has proton conductivity, said manufacturing method comprising:

forming the electrolyte layer on the hydrogen-permeable metal layer; and

forming a conductive layer having electrical conductivity on the formed electrolyte layer, to block off an electrical connection between the conductive layer and the hydrogen-permeable metal layers via pores that are present in the electrolyte layer.

2. A manufacturing method in accordance with claim 1, wherein the conductive layer is an electrode.

3. A manufacturing method in accordance with either one of claims 1 and 2, wherein said forming a conductive layer is implemented by releasing a conductive material toward the electrolyte layer in a direction substantially perpendicular to the electrolyte layer, so as to form the conductive layer that is thinner than the electrolyte layer.

4. A manufacturing method in accordance with either one of claims 1 and 2, wherein said forming a conductive layer is implemented by releasing a conductive material toward the electrolyte layer at a

specific angle that prevents the conductive material from being deposited on surface of the hydrogen-permeable metal layer, which is exposed on the pores present in the electrolyte layer, so as to form the conductive layer.

5. A manufacturing method in accordance with either one of claims 3 and 4, wherein said forming a conductive layer is implemented by adopting a vacuum deposition technique to form the conductive layer.

6. A manufacturing method in accordance with either one of claims 1 and 2, wherein said forming the conductive layer further comprises:

forming a dielectric layer in the pores present in the electrolyte layer, wherein the dielectric layer is mainly made of an insulating material and blocks off a connection between surface of the hydrogen-permeable metal layer, which is exposed on the pores present in the electrolyte layer, and outside of the pores; and

coating the electrolyte layer and the dielectric layer formed in the pores of the electrolyte layer with the conductive layer.

7. A manufacturing method in accordance with claim 6, wherein said forming a dielectric layer is implemented by filling the pores of the electrolyte layer with dielectric fine particles to form the dielectric layer.

8. A manufacturing method in accordance with claim 6, wherein

said forming a dielectric layer is implemented by coating inside of the pores of the electrolyte layer with an insulating material by plating to form the dielectric layer.

9. A manufacturing method in accordance with claim 6, wherein said forming a dielectric layer further comprises:

coating inside of the pores of the electrolyte layer with a metal, which is oxidized to an insulating material, to form a metal coat layer; and

oxidizing the metal coat layer to form the dielectric layer.

10. A manufacturing method in accordance with either one of claims 1 and 2, wherein said forming a conductive layer comprises:

filling the pores present in the electrolyte layer with fine particles;

forming the conductive layer on the electrolyte layer having the pores filled with the fine particles; and

removing the fine particles from the pores, subsequent to said forming the conductive layer on the electrolyte layer.

11. A manufacturing method in accordance with claim 10, wherein said removing the fine particles is implemented by adopting a chemical technique to remove the fine particles.

12. A manufacturing method in accordance with claim 10, wherein

said removing the fine particles is implemented by adopting a physical technique to remove the fine particles.

13. A manufacturing method in accordance with either one of claims 1 and 2, wherein said forming a conductive layer comprises:

forming a protective layer to cover the electrolyte layer; and forming the conductive layer on the protective layer.

14. A manufacturing method in accordance with claim 13, wherein said forming a conductive layer further comprises:

removing the protective layer and fixing the conductive layer to the electrolyte layer.

15. A manufacturing method in accordance with claim 13, wherein the protective layer is mainly made of an insulating material having proton conductivity.

16. A manufacturing method in accordance with either one of claims 1 and 2, wherein said forming a conductive layer is implemented by coating the electrolyte layer with particles of an electrically conductive material having a greater particle diameter than a width of the pores present in the electrolyte layer, so as to form the conductive layer.

17. A manufacturing method in accordance with claim 16, wherein

said forming a conductive layer is implemented by adopting one of arc ion plating, emulsion deposition, and cluster beam deposition techniques to coat the electrolyte layer with the electrically conductive material.

18. A manufacturing method in accordance with either one of claims 1 and 2, wherein said forming a conductive layer is implemented by applying a paste, which contains an electrically conductive material and has a predetermined level of viscosity for effectively preventing invasion of the paste into the pores present in the electrolyte layer, onto the electrolyte layer, so as to form the conductive layer.

19. A manufacturing method in accordance with either one of claims 1 and 2, wherein said forming a conductive layer comprises:

forming a conductive film of an electrically conductive material; and

transferring the conductive film onto the electrolyte layer, so as to form the conductive layer.

20. A fuel cell comprising a hydrogen-permeable metal layer of a hydrogen-permeable metal and an electrolyte layer that is located on the hydrogen-permeable metal layer and has proton conductivity,

said fuel cell being manufactured by a manufacturing method in accordance with any one of claims 1 through 19.